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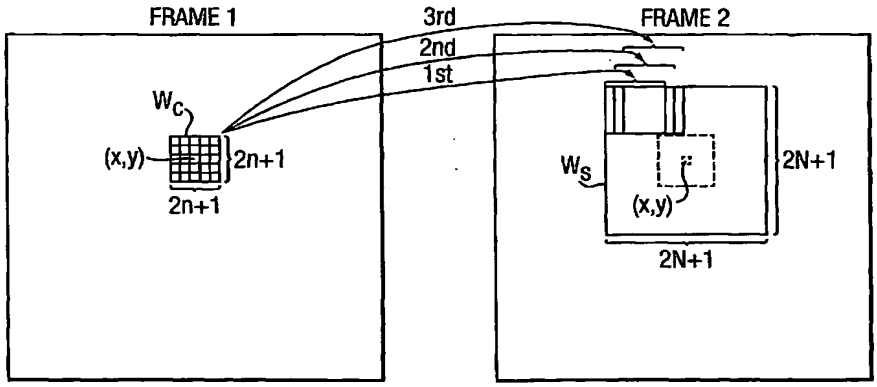
(54) Title: IMPROVEMENTS IN IMAGE VELOCITY ESTIMATION



(57) Abstract: A method of image velocity estimation in image processing which uses a block matching technique in which a similarity measure is used to calculate the similarity between blocks in successive images. The similarity measure is used to calculate a probability density function of candidate velocities. The calculation is on the basis of an exponential function of the similarity in which the similarity is multiplied by a parameter whose value is independent of position in the frame. The candidate velocities are thresholded to exclude those having a low probability. The value of the parameter and threshold are optimised together by coregistering all frames to the first frame, calculating the registration error, and varying them to minimise the registration error. The similarity measure is normalised with respect to the size of the block, for example by dividing it by the number of image samples in the blocks being compared. The similarity measure used may be the $CD_{2\text{-}bis}$ similarity measure in which the mean and standard deviation of the two blocks being compared are adjusted to be the same before calculation of the similarity. This makes the similarity measure particularly suitable for ultrasound images. Further, block matching may be conducted across three frames of the sequence by comparing the intensities in blocks in the first and third, and second and third of the frames and finding the block in the third frame which best matches the block in the second frame and that block's corresponding position in the first frame.

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